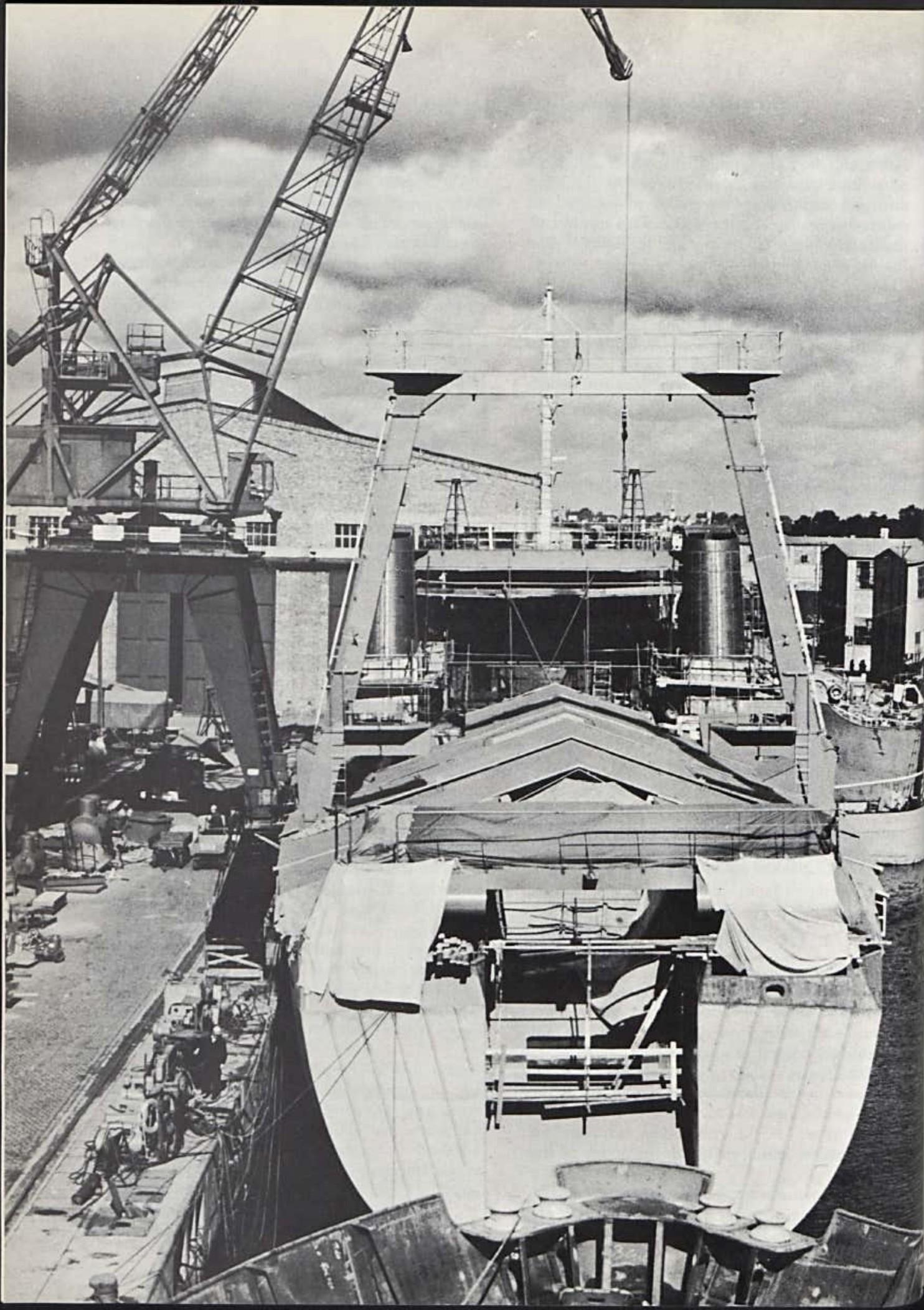


United States  
Naval Institute  
January 1970

# Proceedings





# The Soviet Merchant Marine

By Antony C. Sutton

Why, instead of building most of their own merchant ships, does the Soviet Union continue to buy so many from other countries on both sides of the iron curtain? Does this suggest major technological weaknesses? Or, could this be the reddest of Red herrings, designed to divert the Free World's attention away from what Soviet yards are busily building?

The Soviet Merchant Marine, long cloaked in mystery, seems now to revel in its ubiquity. Its ships appear to be everywhere and if, to Westerners, this great fleet seems to suggest that the supermen who fathered Sputnik have now applied their genius toward designing and building a mercantile marine second to none, such an impression will not offend the Soviets. It may, in fact, be precisely the image they wish to convey.

The Soviet Merchant Marine is, indeed, big, and getting bigger—and where it is heading has not yet been announced. But, if we are to understand its goals, we must first concern ourselves with where it came from. The astonishing answer is, "Mostly, from somewhere outside the Soviet Union." As an example, 75 per cent of the new tonnage added between 1965 and 1966 did not come from Soviet yards. It is probably true that, of the entire fleet, more than two-thirds has been built beyond Soviet borders.

One might then ask, if Soviet shipyards are not building merchant vessels, what are they building?

Let us examine in some detail the origins of the Soviet merchant marine. In order to do this, an analysis has been made of "Supplement No. 1" (1964-1965) to the *Register of Ocean Ships of the U.S.S.R.*, the Soviet equivalent to Lloyd's Register of Shipping. This Russian-origin supplement contains additions to the Soviet mercantile fleet in the years 1965 and 1966, and, for each ship, gives details concerning hull, engine, cargo capacity, and similar construction details. The register is intended for use by port officials throughout the world, which explains the unusually detailed and accurate data from a Soviet source. There are, however, differences between data in the *Register* and that given elsewhere in Soviet sources. For example, the refrigerated cargo capacity of the *Aktyubinsk* is listed as 6,810 cubic meters and elsewhere as 8,628. Similarly, the *Mayakovskii* has a listed capacity of 1,330 cubic meters and 1,800 elsewhere. These may, of course, be owing to differences in measurement—such as counting, or

*The Atlantik* is one of 100 refrigerator ships built for the Soviet Union by East Germany's nationally owned Stralsund shipyard between 1966 and 1970.

failing to count, between-decks space.

The following data were extracted for each ship: place of hull construction, place of engine construction, gross registered tonnage, hold temperatures, and capacity of refrigeration systems.

The objectives of the analysis were: (a) to determine the number and tonnage of ships added to the Soviet mercantile fleet in 1965-1966, including where the hulls were built; (b) to determine where the engines were built (these may or may not be the same places; for example, numerous Soviet-built hulls have imported Czech engines); and (c) to determine the tonnage and technical contribution made by both other Communist countries and the Free World to the Soviet mercantile fleet in the years 1965-1966.

The Supplement contains data on 371 ships aggregating 1,809,972 gross tons. Of this aggregate, only 113 ships, or 460,704 gross tons, had both hulls and engines built in the Soviet Union. By far the greater part of the additions, i.e., the balance of 258 ships or 1,349,268 gross tons, was built outside the Soviet Union in either the Communist countries of East Germany, Poland, Hungary, and Yugoslavia or in the Free World, particularly Holland, Germany, Italy, France, and Japan.

In percentage terms, 25.4 per cent of gross tonnage was built in Soviet shipyards with Soviet-made engines and 74.5 per cent was built outside the Soviet Union.

Soviet-built vessels usually are built to a standard design. In the period under consideration, only 13 merchant vessels larger than 10,000 tons were built.

These were of two types: six 32,841-ton oil tankers—the *Gdansk*, *Dresden*, *Maurice Thorez*, *Otto Grotewohl*, *Palmeiro Togliatti*, and *Richard Sorge*; and seven 11,000-ton cargo ships—the *Babushkin*, *Bajmak*, *Bakuriani*, *Balashikha*, *Belgorod-Dnistrovsky*, *Berislav*, and *Braslav*. All six of the 32,000-tonners have Soviet steam turbine engines, which seems to suggest a lack of confidence on their part in their ability to build reliable diesel engines. These 13 ships comprise the total Soviet mercantile construction over 10,000 tons. They also comprise 59.61 per cent of the 460,704 tons of Soviet-built merchant ships built in this period. The other standard ships built were much smaller: 100-ton and 862-ton refrigerated fishing vessels, 3,550-ton refrigerated cargo ships, and 4,896-ton lumber carriers.

An examination of the geographic distribution of hull construction indicated that 184 hulls, grossing 593,523 tons, had hulls built in the Soviet Union, while the balance of 1,216,449 tons was built in 14 foreign countries. (See Table A).

Of this foreign-built tonnage, 57 per cent was built in the Communist nations of Poland, Yugoslavia, and East Germany, with Romania and Bulgaria contributing small amounts. The balance of non-Soviet-built ships came from the Free World—Japan, Finland, West Germany, and Sweden together contributed about 33 per cent of the total non-Soviet-built hulls—the remaining 10 per cent from other Free World sources.

An examination of the geographic distribution of marine engine construction indicated that between

BURMEISTER AND WAIN



*The refrigerator fish carrier Kompas is the fifteenth of 21 almost identical vessels built for the Soviet Union by Burmeister and Wain's shipyard, Copenhagen, Denmark.*

NOVOSTI FROM



*Pyatdesyat Let Oktyabrya (built by Poland)*

Table A

Origins of Foreign-built Soviet Hulls  
and Engines (1965 and 1966)

Country	Gross Tonnage	Percentage of Total	
		Hulls	Engines
Poland	259,530	21.34	20.83
Yugoslavia	229,884	18.90	17.60
East Germany	201,852	16.59	14.63
Japan	139,850	11.49	10.70
Finland	92,681	7.62	6.32
Czechoslovakia			6.46
West Germany	90,364	7.43	6.65
Sweden	83,343	6.85	6.38
Denmark	32,893	2.70	4.21
Italy	31,133	2.56	3.21
Holland	20,088	1.65	1.64
Romania	11,808	0.97	
Hungary	8,734	0.72	0.68
France	8,425	0.69	0.64
Bulgaria	5,864	0.48	
	1,216,449	99.99	99.95

1965-1966, only 113 newly registered ships had both hulls and engines built in the Soviet Union. While it was fairly common for ships to have Soviet-built hulls coupled with foreign engines, there were only one or two insignificant examples of hulls built in foreign yards, but equipped with Soviet engines. Only three

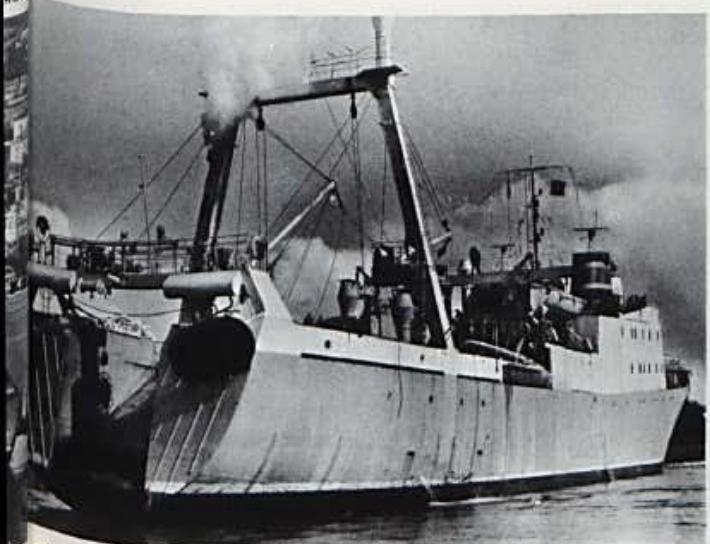
ships grossing 10,840 tons were built abroad and so equipped with Soviet-built engines. In other words, although only one-quarter of the hulls were built in the Soviet Union, even less than one-quarter of the main engines for these ships were built in Russia.

The two major suppliers of imported engines for Soviet-built hulls were Czechoslovakia and East Germany. East Germany supplied engines for 43 Soviet ships aggregating 15,885 tons, and Czechoslovakia supplied engines for 28 Soviet ships aggregating 84,457 tons. As these engines had to be transported to Soviet shipyards for installation, they were necessarily for smaller vessels. Apart from this, there was little movement of marine engines; the only exception was supply by Danish manufacturers of engines for three Finnish ships and one medium-size Polish ship, both built on Soviet account.

In general, apart from Soviet import of engines for Soviet-built hulls, the rule is that the country that built the hull also built the engines.

The greater reliance on imported engines apart from an already sizeable reliance on imported ships, suggests that the Soviet Union has a technological gap in certain types of large marine engines. Of the 371 ships, seven had steam turbines, one had a gas turbine, and the remainder were diesels. The technological gap may be considerable as the Soviets have traditionally favored domestic supply even where quality is lower than the imported product.

Moreover, as this Soviet-built mercantile tonnage is



view of the Atlantik (built by East Germany)



Vsevolod Pudovkin (built in Romania with Italian engines)

small in relation to domestic shipyard capacity, it may be deduced that the Soviets have a gigantic naval construction program in progress. Furthermore, as mercantile vessels completely built in the Soviet Union tend to be small and low powered, it also may be deduced that the cream of Soviet naval architects, shipbuilding technicians, and workers are concentrated in the naval program. If this be so, then both the size and rapidity of construction of the naval program are determined by the extent that technical skills and workers can be taken from mercantile construction by ordering cargo and refrigerator ships abroad.

Given the evidence concerning the proportion of mercantile ships with advanced characteristics originating outside the Soviet Union, one must conclude that the transfer of skills and technology, both from the West to the Soviet Union and from Soviet mercantile ship construction to naval construction, is a matter of considerable significance.

#### *Soviet marine refrigeration capabilities.*

The Supplement offered some interesting clues on Soviet refrigeration capabilities. Of the 371 ships added to the Soviet mercantile fleet, 166 were refrigerator cargo ships. Analysis of construction details given for these suggests a remarkable technological lag on the part of the Soviet Union.

In general, technological problems in refrigeration increase with the size of the unit to be refrigerated and the lower the temperature at which it is desired to hold

the unit under refrigeration. These problems relate to the mechanical equipment required to "pull down" the temperature; in marine refrigeration there are additional problems posed by limited space and varying outside temperatures encountered by ships.

Table B gives the number of refrigerator ships added to the Soviet mercantile fleet between 1965 and 1966 by country of origin for the hull, together with hold temperatures.

In instances where only chilling temperatures were required, ships were built in the Soviet Union; similarly, for temperatures down to  $-8^{\circ}$  Centigrade, all capacity was Soviet-built.

For hold temperatures of  $-23$  and below (down to  $-30^{\circ}$  Centigrade), no ships were built in the Soviet Union. All such vessels were built in the East European Communist countries or in the Free World.

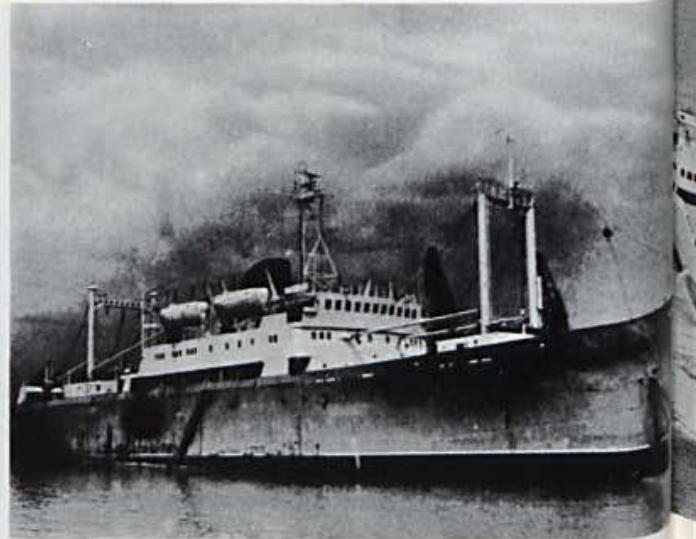
Ships with hold temperatures between  $-18$  and  $-23^{\circ}$  Centigrade were built both inside and outside the Soviet Union, but follow the general rule—the lower the cargo hold temperature, the greater the probability that the ship was built outside the Soviet Union.

Further examination of the data on origin of registered tonnage indicated that 98 small refrigerated ships were built in Russia but large refrigerated carriers were built abroad. For example, a series of 38 100-ton trawlers with chilled ( $-2^{\circ}$  Centigrade) capacity were built in the Soviet Union. No vessels for chilled storage were built outside the U.S.S.R.

On the other hand, Free World shipyards supplied



Karl Linne (built in Sweden)



Frans Gals (built in Netherlands)

Table B  
Soviet Refrigerated Cargo Ships Built in 1965 and 1966

	Fahrenheit	32	28	25	18	0	-9	-11	-13	-18	-22
Hulls built in:	Centigrade	0	-2	-4	-8	-18	-23	-24	-25	-28	-30
Soviet Union	3	35	3	1	53	3					
East Germany							7	22			
Poland						3		4			
West Germany					3					3	
Sweden										8	
Holland					1			3			
Denmark					4			3			
Japan						2				4	
France									1		
TOTALS		3	35	3	1	61	8	7	32	1	15
Per cent built in U.S.S.R.		100	100	100	100	87	38	0	0	0	0

large 18,000-ton cargo ships with hold temperatures down to  $-30^{\circ}$  Centigrade, a quite different order of magnitude in ship construction and technical skill. The average gross tonnage of Soviet-built refrigerator ships, then, was only 1,655 tons, while the average gross tonnage of non-Soviet-built refrigerator ships, in the Supplement, was 8,355 tons.

Thus, Free World refrigerator ships built to Soviet account are large ships with low hold temperature capabilities; the Chart, which plots "gross registered ton-

nage" against "cargo hold temperature," demonstrates this quite clearly.

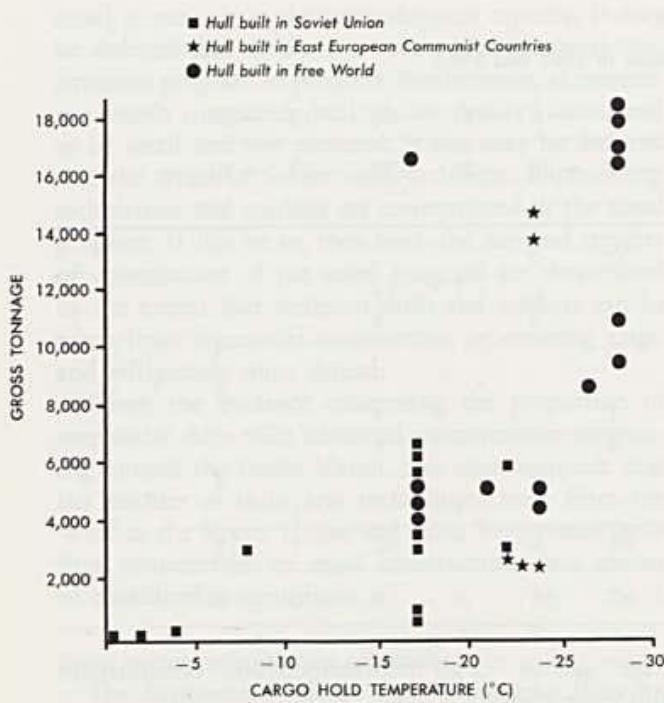
More insight can be gained by an examination of the cubic capacity of refrigerated cargo holds. The Soviet PTS-class of 100 gross tons had two holds of 32 and 34 cubic meters. The largest Soviet-built refrigerator ship in this period, the *Vologda* of 6,455 tons, has four holds of 860, 4,180, 1,460, and 1,600 cubic meters. On the other hand, the *Vilis Lasis*, 16,389 tons built on Soviet account in West Germany, has holds of 2,490,



Lenino (built in Japan)



Sakhalinskie (built in Sweden)



3,763, 2,531, 4,162, and 1,920 cubic meters. So we may conclude that the refrigerated cubic capacity of Soviet-built vessels is small, with larger capacity units purchased in the West.

Three points, then, seem irrefutable. The Soviet Union has a limited capability in marine refrigeration. Shipyards in other Communist countries and the Free

World are used to build up the Soviet mercantile fleet. Soviet shipbuilding capabilities alone would be hard pressed without diverting substantial resources from other endeavors.

This raises interesting questions concerning Soviet strategic intent. The Soviets are neglecting construction of shipbuilding and repair facilities for their large merchant vessels. On the other hand, they are going all-out to build a large mercantile fleet with specialized characteristics—e.g., the large percentage of refrigerator ships and the extra-large hatches of the *Poltava*-class vessels. All of this suggests an all-or-nothing strategy for some future date—although such a strategy is not consistent with either Soviet history or ideology.

#### *Mechanically refrigerated railroad cars.*

According to a paper by three well-qualified Soviet engineers, refrigerated trains with 23 cars each have operated on Soviet railways since 1953, and "These trains were built in the German Democratic Republic on order, and in accordance with technical specifications of the Ministry of Railways of the U.S.S.R." It is noteworthy that each refrigerator train is serviced by a crew of seven men, including three mechanics, whereas mechanical refrigerator cars in the United States are never provided with maintenance personnel, although they may be serviced en route.

Further, it is stated that three-car, five-car, and 12-car sections of refrigerator cars are also operated. The five-car and 12-car sections "... are built in the German



Kegums (built in Japan)



Zelenoborsk (built in Denmark)

Democratic Republic according to the technical orders of the Ministry of Railways of the U.S.S.R. and three-car sections are built in the U.S.S.R."

It appears, then, that railroad mechanical refrigeration follows a similar pattern to marine refrigeration. The larger units with the heavier workload are built outside the Soviet Union and the smaller units inside the Soviet Union.

At this point, then, we may conclude that, in spite of clear economic and technical backwardness, the Soviets are adding to their mercantile fleet at a rapid rate, well in excess of one million gross tons per year and, let's say it again, these new ships are not, for the most part, coming from Soviet shipyards.

Similarly, only 26 per cent of refrigerated tonnage was built in the Soviet Union; 22 per cent was built in other Communist countries; and no less than 52 per cent in the Free World.

Larger ships, particularly diesel-powered and refrigerated vessels, are more often built in other Communist countries or the Free World. Vessels with more advanced refrigeration capabilities (i.e., 18,000 tons with cargo temperatures down to  $-30^{\circ}$  Centigrade) are without exception built in the Free World.

It appears that Soviet ambitions are far greater than her domestic engineering abilities; but what are these ambitions—and how do they affect the United States and the Free World?

Admiral Arleigh Burke, in the foreword to Com-

mander Herrick's *Soviet Naval Strategy*, asks, "why have the Soviets developed a Navy at all?" and answers the question in terms of peaceful-co-existence; an answer implicitly assuming a basic factor by-passed by Herrick himself; that of *ideology* and the influence of ideology on Soviet strategy. Analyses of Soviet strategy cannot be drawn within the traditional Western (i.e., non-Communist) framework. Unfortunately for us, the Communists never have, do not and, so long as they remain Communists, never will—all Senatorial optimists to the contrary—use Western assumptions and methods of logic to arrive at conclusions on any topic, including naval strategy and the use of their merchant fleet.

The Communists have been successful for 50 years, not because they are supermen (indeed, as we have just seen, they can be pitifully weak in some respects—including shipbuilding and marine diesel production) but because their thinking and actions have not been limited by Western conventions. Consequently, time after time they have surprised their opponents.

Discussion of Soviet intentions has to start from the basic premise that the Soviet Union is ruled absolutely by the Communist Party ("the" Party as the comrades call it), which permits no opposition. This is an all-powerful, ruthlessly totalitarian organization, an intellectual (not a workers) movement. It is totally dedicated to conversion of the world to a Communist system. Whether this rose of world revolution smells any sweeter under another name, "national interest," is irrelevant, what is fundamentally relevant is the fact that



Spaask (built in Japan)



Nataliya Kovshova (built in France)

we have to deal with a dedicated ideologically motivated force, where rule by naked power replaces our western concepts of compromise and tolerance. This is a difficult framework for us to understand fully and many who have found individual freedom in the West display bewilderment and concern at our seeming inability to appreciate Soviet motivations and techniques for what they are—the ruthless use of total power to achieve an unchanging objective.

The dominant task of the Soviet military forces, including the Soviet Sea Forces—the Red Fleet, the merchant marine, and the fishing fleet heavily built in the West and essential parts of the over-all Soviet schema—is to carry out world revolution in a manner decreed by The Party. The central question is not, therefore, whether the Soviet Sea Forces are "defensive" or "offensive," although in a narrow technical sense they may be described as "defensive," indeed nothing *looks* more "defensive" than a merchant ship. By definition, both the Soviet Navy and the Soviet Merchant Marine have major roles to play in the overthrow of world capitalism, and was for this purpose is, of course, a just war (i.e., a defensive war and morally justifiable) in Communist terminology.

Given the recent, rapid expansion of Soviet Sea Forces, the key question for the U. S. Navy planner is: how can this combined force be used to threaten the Free World? Whether it is "defensive" or "offensive" is irrelevant to the strategic aspect, although not to the operational aspect, since its only *raison d'être* is world revolution.

We may at this point establish likely constraints on Soviet use of its sea power. Adventurism is a cardinal sin to the Soviets. Wars between national systems are presently downgraded in favor of peaceful co-existence, i.e., internal wars of national liberation. Conflict with the United States is, at this time, to be avoided—unless the opportunity presents itself for a first strike knock-out blow. Internal subversion and espionage are, however, to be accelerated, and the U. S. Navy is a prime target.

A premium is placed on surprise, daring action (quite different from adventurism), bluff, and above all a realistic calculation of the opponent's strengths and weaknesses in relation to Soviet strengths and weaknesses.

We can, therefore, establish guidelines governing probable Soviet use of its Sea Forces.

First, enormous emphasis has been placed, as we have seen on construction ("purchase" might be a more accurate word) of a modern merchant marine. This is consistent with the fundamental Soviet policy of inciting and supporting wars of national liberation for the purpose of ultimate world revolution. About 100 Soviet merchant ships—many were built in the West—are in use on the Haiphong run, based in Black Sea ports and

Vladivostok. They now carry weapons and supplies for the attempted take-over of South Vietnam.

The *Poltava*-class cargo ship became famous as a carrier of missiles in the Cuban Crisis. This class of ship has Burmeister & Wain marine diesels (Model No. 674-VT2BF-160) manufactured in Copenhagen. Even further, this Danish company has a technical-assistance agreement signed in 1959 to enable the Soviets to manufacture the famed B & W marine diesels at Bryansk in the Soviet Union.\* The State Department appears completely unable or unwilling to prevent such military assistance by an "ally" to a dedicated enemy.

An earlier Soviet attempt to subvert the Congo was a failure, in part owing to reliance on air supply rather than seaborne supply. Therefore we assert—the U. S. State Department to the contrary—that the key component of the Soviet ability for world revolution is its merchant fleet—not its naval forces; these ships are presently classified as "peaceful goods" and so not subject to NATO embargo.

Second, U. S. Navy strike forces can be—and have been—effectively neutralized by pickets, demonstrations, and dovish senatorial speeches. An excellent example is Soviet supply of the Vietnamese War; the more than one hundred Soviet registered merchant ships regularly steaming to Haiphong are moving without hindrance through oceans controlled by the U. S. Navy. Interdiction has been effectively blocked by political action within the United States. A likely Soviet assumption is that similar internal political action by sympathetic "progressive forces" will neutralize any attempted U. S. interdiction of future moves toward world revolution. From the Soviet viewpoint, it makes little sense to spend "X" billion rubles on a new aircraft carrier when the required goal can be achieved by "Y" thousand dollars invested in political action and subversion.

Third, and a major problem for the Soviets, is the necessity to control carefully its moves toward world revolution so as to avoid stirring the Free World into hostile counteraction. Of all the low-level counteractions available to the West, the one the Soviets have reason to fear most is an embargo to cut off Western technical support for Soviet industry.

Call it Mark Twain's Law—"My life has been filled with terrible things, most of which never happened."—or whatever, this Soviet fear, too, has thus far proven to be groundless. And things are not likely to change.

\* A word of explanation on the *Poltava* engines. Lloyd's has them listed as B & W type made at Bryansk (no doubt under the impression they were made under the B & W technical-assistance agreement at Bryansk). The Soviet Register, however, lists them as of Danish manufacture and gives the details for the model number quoted. If they were made at Bryansk the Soviet Register would have listed them as made in the Soviet Union and given the B & W specification.

Poor, befuddled Uncle Sam, unsure whether, or where, or how, to draw the embargo line, mumbles angrily to himself while the Bolshevik bully continues to kick sand in his face and pilfer his picnic basket of technological goodies.

It would seem to be a cardinal principle that Western transfers of advanced technology, including, of course, merchant ships and marine engines, must continue and cannot be impeded by Western counter-moves to Soviet acts. This tightrope has been most successfully walked for some 50 years now because the Soviets have mustered considerable support from those Westerners who understand little of Soviet objectives and less of Soviet methods.

Fourth, Soviet naval forces proper are indeed intended for coastal defense, harassment and diversionary moves. But while those who point this out are examining the technically "defensive" characteristics of the Soviet fleet and drawing the conclusions they are *supposed* to draw, i.e., that this implies a defensive strategy (in our sense of the term), the Soviet Merchant Marine will be busy about its main task of logistic support of subversion and preliminary economic penetration. The substantial fishing fleet has its own subversion and intelligence missions.

Fifth, it is reasonable to presume that some degree of fear and a great deal of uncertainty are in the hearts of the Soviet hierarchy. This may give rise to more lengthy discussion than usual—even for wordy Bolsheviks—but conversely an increased probability of hasty action under immediate pressures. From the Soviet viewpoint, the "laws of history" are not working as predicted; the capitalist West is more healthy than Marx predicted it would be, while the socialist camp is less healthy than Lenin predicted. Thus fears, frustrations,

and an inexplicable inaccuracy (from the Soviet viewpoint) in Marxist-Leninist predictions will have a somewhat unpredictable influence on the calculations of Soviet planners.

Finally, there can be no question that the size and make-up of the Soviet Sea Forces, previously the weakest part of the Soviet military structure, reflects a changing emphasis in the means of attaining world revolution—away from land routes and towards sea routes, as the means of leapfrogging over the capitalist wall that the Soviets see around them. Ultimately, it will be a major means of more effectively coming to grips with the Soviet's paramount problem—the United States.

However, Soviet ability to fulfill its expansionary objectives is heavily dependent on the Free World. A prime fact that appears to have completely escaped our own defense planners is that we have the absolute means to inhibit Soviet expansionary strategy without firing a shot or losing a man. We can halt the export of merchant ships and engines to the Soviet Union.

We surely missed our best opportunity back in the 1950s and early 1960s, but it is still well within our means to use present Soviet weaknesses to avoid future problems. On the other hand, the fuzzy thinking and muddy logic about things Soviet which characterizes U. S. and Allied policy bodes ill for our willingness and ability to use this most humane of all weapons.

---

A graduate of the University of London in 1951, Mr. Sutton took four years of graduate work at the University of California before becoming an Assistant Professor of Economics at California State College, Los Angeles, from 1963 to 1968. Since 1968, he has been a Research Fellow at the Hoover Institution on War, Revolution and Peace, Stanford University. He is now working on the second and third volumes of a study of Soviet Economic Development.

### Royal Etiquette

In 1965, I was liaison officer when the Yang di-Pertuan Agong (King of Malaysia) embarked in my ship, KD *Hang Tuah*. His Majesty, resplendent in the full ceremonial uniform of Admiral of the Royal Malaysian Navy, arrived on board with his entourage. After the ceremonies were over, we sailed. Everyone went below and changed into bush jackets and trousers.

The Chief of the Armed Forces Staff, a full general, was waiting on the bridge when His Majesty reappeared. At once, I noticed that His Majesty's shoulder straps were on backwards, and I advised the Army Major who was his ADC. Meanwhile, the General, who is very sharp at these little matters, said, "Captain, aren't His Majesty's shoulder straps pointing in the wrong direction?" To my horror, the Captain turned to me and said, "Well, Khoo, you're the liaison officer; what's the answer?"

In a sudden flash of inspiration, I replied, "Sir, the King can do no wrong. If he chooses to wear his shoulder straps backward, I suggest the General should also conform."

His Majesty roared with laughter and, turning to the Chief of the Armed Forces Staff, said, "General, you had better conform."

—Contributed by Commander Khoo Tee Chuan, A.M.N., Royal Malaysian Navy